PET

(Ph.D. ENTRANCE TEST)

SYLLABUS
SUBJECT: BOTANY

Section-B

UNIT – I: DIVERSITY OF MICROBES

Viruses: General characters, Classification based on host, Transmission of viruses, Economic importance of viruses, Mycoplasma: General Characters, Bacteria: General characters, Ultra structure of bacterial cell, Mode of nutrition and reproduction, Archaebacteria-Habit and forms Cyanobacteria- Salient fatures of Role of bacteria and cyanobacteria in agriculture, Fungi**:** General characters, Classification (as per Alexopolous and Mims, 1979), reproduction, life cycle and economic importance, Lichens: General characters

UNIT – II: DIVERSITY OF CRYPTOGAMS

Algae: General characters, of algae, Classification of algae (As per F.E.Fritsch, 1935), reproduction, life cycle pattern and economic importance, Bryophyta: General characters, Classification (As per N.S.Parihar), life cycle pattern and economic importance, Pteridophyta: General characters, Classification (as per N.S.Parihar), reproduction and life cycle

UNIT – III: DIVERSITY OF PHANEROGAMS

Gymnosperms: General characters, classification (Arnold, 1948), reproduction and life cycle, Angiosperms: General characters, taxonomic ranks, types of classification (artificial, natural and phylogenetic) salient features of Bentham & Hooker's system of classification with merits and demerits, binomial nomenclature

UNIT-IV: UTILIZATION OF PLANTS

Botanical name, family, method of cultivation and economic importance of Cereals, Pulses, Fiber yielding plants, Oil yielding plants, Timber yielding plants and Medicinal plants (Aloe, Ocimum, Adathoda, Withania)

UNIT – V: ECOLOGY

Ecology – Definition and Scope, Structure of ecosystem (Abiotic and Biotic), Types of ecosystem, Ecological pyramids and energy flow, Food chain and Food web, Morphological and anatomical adaptations of plants to water stress conditions-Hydrophytes, Xerophytes and , halophytes, Pollution: Causes and effects of water, soil and air pollution and their control measures, Aforestation, deforestation and Chipko movement

UNIT–VI: CELL BIOLOGY AND GENETICS

Cell and cell organelles , structure, chemical composition, euchromatin, heterochromatin and function of typical chromosome, Cell division- Process and significance of Mitosis and Meiosis, Cell cycle, Genetic Inheritance- Mendelism, Mendel's Laws of inheritance- Explanation and examples of Monohybrid cross, Dihybrid cross, Back cross and Test cross, Gene interaction and epistasis- (Allelic and non allelic), Sex linked inheritance, Holandric gene – hypertrochosis, Chromosomal Aberrations, Human syndromes

UNIT – VII: HISTOLOGY AND ANATOMY

Meristem, Simple Tissues, Complex Tissues, Secretary Tissues, Root, stem and leaf anatomy of dicotyledons and monocotyledons, Secondary and Anomalous secondary growth in dicot and monocot root and stem

UNIT–VIII: PLANT PHYSIOLOGY

Plant water relations, Mineral nutrition, Growth and development Physiology of flowering and plant movements, Photosynthesis and Photorespiration Respiration Basic Biochemistry- Introduction different organic constituents of the cell, Enzymes and Nitrogen metabolism

UNIT –IX: PLANT PATHOLOGY

Scope and significance of plant pathology, Concept of plant disease, Causes of plant disease, Classification of plant diseases on the basis of causal agents, symptoms and spread (Air, soil and seed, Plant disease diagnosis: Isolation of plant, pathogens, pure culture techniques, Koch's postulates, Seed pathology, Biodeterioration of storage food grains and fruits

UNIT –X: DISEASE DEVELOPMENT

Disease Development: Mode of entry of plant pathogens, Role of environment, toxins and enzymes on disease development, Defense mechanism in plants-Structural and biochemical, **Plant** disease management: Improved Cultural practices, Exclusion, Eradication, Chemical control and Biological control

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